

## Ionic Liquids with low viscosity as electrolytes in electrochemical devices for energy storage

CSIC has developed a new family of Ionic Liquids (ILs) with tiazole-like core structure, which possess high ionic conductivity, thermic & electrochemical stability, low viscosity and no inflammability. The new family, that can be easily prepared from economically commercial compounds, present a wide range of working temperatures, and could be used as electrolytes in electrochemical energy storage devices.

*We are looking for a company interested in Patent Licensing*

### Description of the offer

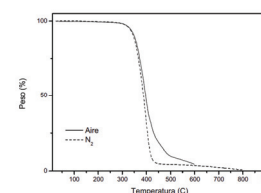
The electrochemical devices commercially available for energy storage generally use liquid electrolytes, either organic or aqueous type, due to their elevated conductivity and reasonable wide electrochemical stability window. Recently it has been described the use of ionic liquids (ILs) as electrolytes in electrochemical devices for energy storage, as lithium/ion lithium rechargeable batteries and superconductors.

These materials possess ionic conductivity values similar to organic liquid electrolytes, high electrochemical stability, in addition to the fact that their very low vapor pressure and no inflammability properties allow to increase the device security level.

A new family of tiazole-based ILs with low viscosity and high electrochemical & thermal stability has been prepared. The new compounds are easily obtained from commercially available compounds following an efficient and straightforward process using inexpensive reagents. The new compounds have been tested, showing an ionic conductivity and a stability window similar or greater than other related compounds.



The new family of Ionic Liquids could be used as electrolytes in electrochemical energy storage devices



The new compounds possess an excellent thermal & electrochemical stability, in both neutral and oxidant atmospheres

### Innovative aspects and advantages

- Compared to other ILs used in electrochemical devices, the new compounds show lower viscosity, enhancing their ionic conductivity properties.
- The new ILs are stable under inert and oxidant atmosphere until temperatures around 300 °C, covering the normal working range of commercial electrochemical devices.
- The new ILs presents a wide range of safety use. They possess a very low vapor pressure, as well as no inflammability properties.
- A lot of commercial ILs have complex chemical structures that require a lot of synthetic steps and difficult their scale-up. The new compounds are easily obtained with good yield using inexpensive reagents.
- The new compounds can be used as electrolytes in energy storage devices, as last generation lithium/ion lithium rechargeable batteries.

### Patent Status

Priority patent application filed (with international effect)

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